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Amendment To The Claims

Below is a listing of the claims that will replace all prior versions and listings of claims in the present patent application.

1.   (Original)   An apparatus for detecting a hot rail car surface comprising:

an infrared sensor for acquiring an infrared signal from a rail car surface of a rail car and transducing said infrared signal into an electrical signal;

a rank filter for filtering said electrical signal to produce a filtered array;

a first peak detector for detecting a maximum filtered value of said filtered array; and

a first comparator for comparing said maximum filtered value to a detection threshold to produce a filtered alarm signal.

2.   (Original) The apparatus of claim 1 wherein said rank filter has a rank of about one-half.

3.   (Original) The apparatus of claim 1 further comprising:

a wireless transceiver for acquiring rail car surface characteristics from a wireless tag mounted on said rail car; and

a filter parameter calculator for calculating a filter length and rank of said rank filter as a function of said rail car surface characteristics.

4.   (Original) The apparatus of claim 1 further comprising:

an unfiltered signal buffer for buffering said electrical signal to produce an unfiltered array;

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a second peak detector for detecting a maximum unfiltered value of said unfiltered array;

a second comparator for comparing said maximum unfiltered value to said detection threshold to produce an unfiltered alarm signal; and

an alarm comparator for comparing said unfiltered alarm signal to said filtered alarm signal to produce a censored false alarm signal.

5.   (Currently Amended)   The apparatus of ~~the previous~~ claim 4 wherein:

said censored false alarm signal comprises a binary signal having a true value when said unfiltered alarm signal differs from said filtered alarm signal and a false value otherwise; and

said apparatus further comprises a counter for counting said false values to produce a censored false alarm count.

6.   (Currently Amended) The apparatus of ~~the previous~~ claim 5 further comprising a failure isolator for diagnosing a failure mode from said censored false alarm count.

7.   (Original)   An apparatus for detecting a hot rail car surface comprising:

an infrared sensor for acquiring an infrared signal from a rail car surface of a rail car and transducing said infrared signal into an electrical signal;

a rank filter for filtering said electrical signal to produce a filtered array;

a first peak detector for detecting a maximum filtered value of said filtered array;

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a first comparator for comparing said maximum filtered value to a detection threshold to produce a filtered alarm signal;

a wireless transceiver for acquiring rail car surface characteristics from a wireless tag mounted on said rail car;

a filter parameter calculator for calculating a filter length and rank of said rank filter as a function of said rail car surface characteristics;

an unfiltered signal buffer for buffering said electrical signal to produce an unfiltered array;

a second peak detector for detecting a maximum unfiltered value of said unfiltered array;

a second comparator for comparing said maximum unfiltered value to said detection threshold to produce an unfiltered alarm signal; and

an alarm comparator for comparing said unfiltered alarm signal to said filtered alarm signal to produce a censored false alarm signal.

8.   (Currently Amended)   The apparatus of ~~the previous~~ claim 7 wherein:

said censored false alarm signal comprises a binary signal having a true value when said unfiltered alarm signal differs from said filtered alarm signal and a false value otherwise; and

said apparatus further comprises a counter for counting said false values to produce a censored false alarm count.

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9.   (Currently Amended) The apparatus of ~~the previous~~ claim 8 further comprising a failure isolator for diagnosing a failure mode from said censored false alarm count.

10.   (Original) A method for detecting hot rail car surfaces, the method comprising:

acquiring an infrared signal from a rail car surface of a rail car;

transducing said infrared signal into an electrical signal;

filtering said electrical signal using a rank filter to produce a filtered array;

detecting a maximum filtered value of said filtered array; and

comparing said maximum filtered value to a detection threshold to produce a filtered alarm signal.

11.   (Original) The method of claim 10 wherein said rank filter has a rank of about one-half.

12.   (Original) The method of claim 10 further comprising:

acquiring rail car surface characteristics from a wireless tag mounted on said rail car; and

calculating a filter length and rank of said rank filter as a function of said rail car surface characteristics.

13.   (Original) The method of claim 10 further comprising:

buffering said electrical signal to produce an unfiltered array;

detecting a maximum unfiltered value of said unfiltered array;

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comparing said maximum unfiltered value to said detection threshold to produce an unfiltered alarm signal; and

comparing said unfiltered alarm signal to said filtered alarm signal to produce a censored false alarm signal.

14.   (Currently Amended)   The method of ~~the previous~~ claim 13 wherein:

said censored false alarm signal comprises a binary signal having a true value when said unfiltered alarm signal differs from said filtered alarm signal and a false value otherwise; and

said method further comprises counting said false values to produce a censored false alarm count.

15.   (Currently Amended) The method of ~~the previous~~ claim 14 further comprising diagnosing a failure mode from said censored false alarm count.

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16.   (Original) A method for detecting hot rail car surfaces, the method comprising:

acquiring an infrared signal from a rail car surface of a rail car;

transducing said infrared signal into an electrical signal;

filtering said electrical signal using a rank filter to produce a filtered array;

detecting a maximum filtered value of said filtered array;

comparing said maximum filtered value to a detection threshold to produce a filtered alarm signal;

acquiring rail car surface characteristics from a wireless tag mounted on said rail car;

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calculating a filter length and rank of said rank filter as a function of said rail car surface characteristics;

buffering said electrical signal to produce an unfiltered array;

detecting a maximum unfiltered value of said unfiltered array;

comparing said maximum unfiltered value to said detection threshold to produce an unfiltered alarm signal; and

comparing said unfiltered alarm signal to said filtered alarm signal to produce a censored false alarm signal.

17.   (Currently Amended)   The method of ~~the previous~~ claim 16 wherein:

said censored false alarm signal comprises a binary signal having a true value when said unfiltered alarm signal differs from said filtered alarm signal and a false value otherwise; and

said method further comprises counting said false values to produce a censored false alarm count.

18.   (Currently Amended) The method of ~~the previous~~ claim 17 further comprising diagnosing a failure mode from said censored false alarm count.

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